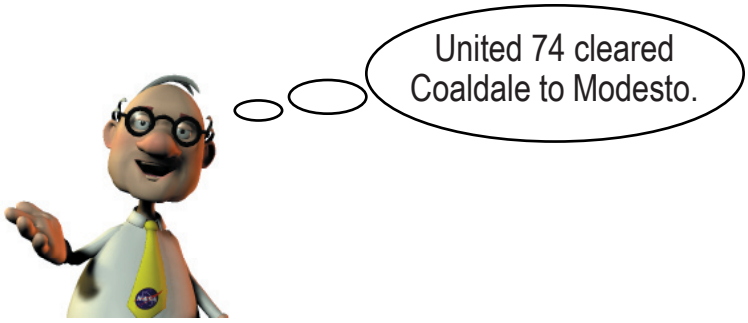
LineUp With Math™

Math-Based Decisions in Air Traffic Control

Student Workbook C

- Resolving Air Traffic Conflicts by Changing Route
  - 3 planes, each at the same speed
  - Simulator problems 3-1, 3-2

- Simulator at: www.atcsim.nasa.gov

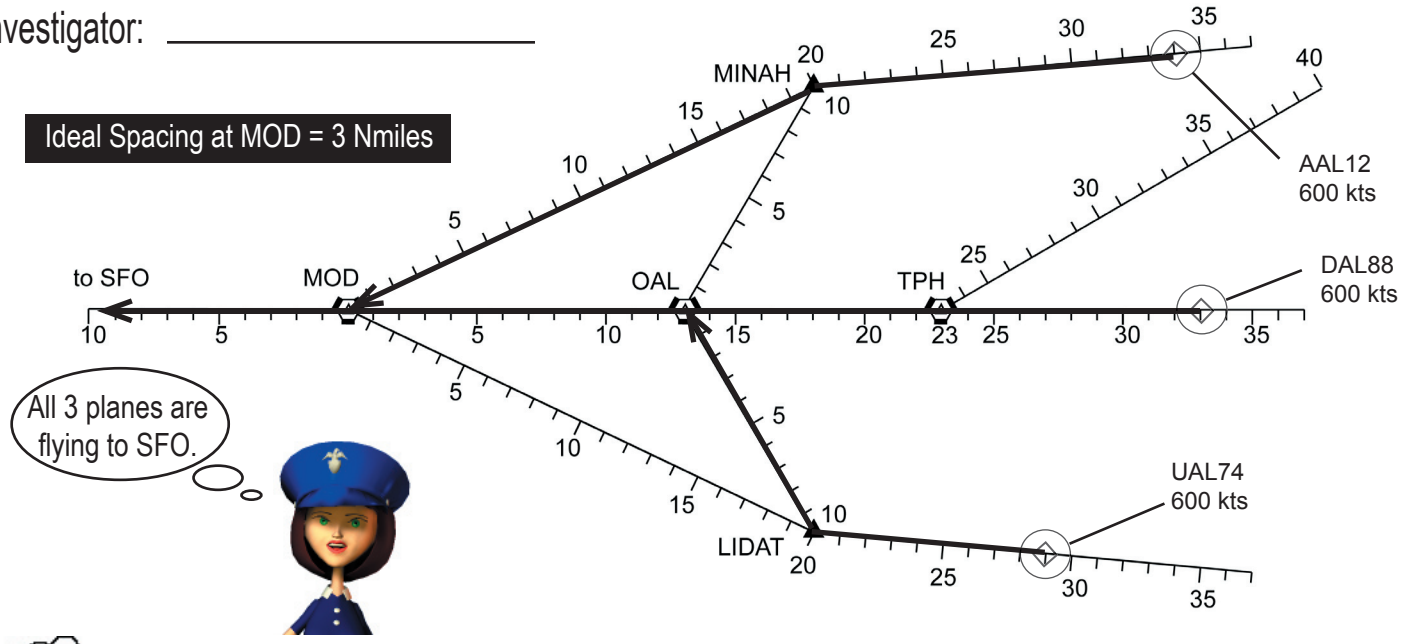


Investigator: _____

An Airspace Systems Program Product

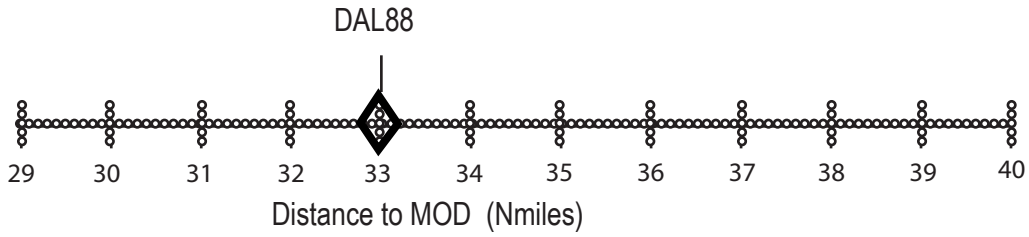
Problem 3-1

Investigator: _____



1

- Use the flight plans to find each plane's travel distance to MOD.
- On the line below, use a ◇ to plot the travel distance to MOD for each plane.
- Label each plane.



2

To fill in the table below:

- Use your plot to figure out the arrival order and spacing at MOD.
- See if any spacing is less than the minimum.
- See if extra spacing is needed to get the Ideal Spacing.

Arrival Order at MOD:	1st	2nd	3rd
Plane Call Sign			
Spacing at MOD		Nmi	Nmi
Is spacing at least the 2 Nmi minimum?		☐ No ☐ Yes	☐ No ☐ Yes
Extra spacing needed for 3Nmi ideal		Nmi	Nmi

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3 What route changes would you make to solve any spacing problems?

Arrival Order	Plane	New Route (if needed)	New Distance to MOD	New Spacing at MOD
1st			Nmi	Nmi
2nd			Nmi	
3rd			Nmi	Nmi

CAUTION: Be sure to mark out any old routes you've changed and darken the new routes.

4 To picture the NEW arrival order and spacing, use a ◊ to plot the new distances to MOD for each plane on the line below. Label each plane.

Distance to MOD (Nmiles)

5 With your new routes, are the spacings at least the Minimum Spacing (2 Nmiles)?

☐ No ☐ Yes

If No, try again.

6 With your new routes, are the spacings equal to the Ideal Spacing (3 Nmiles)?

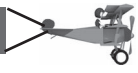
☐ No ☐ Yes

7 If No, what could the controller do to make the spacing Ideal?

_____

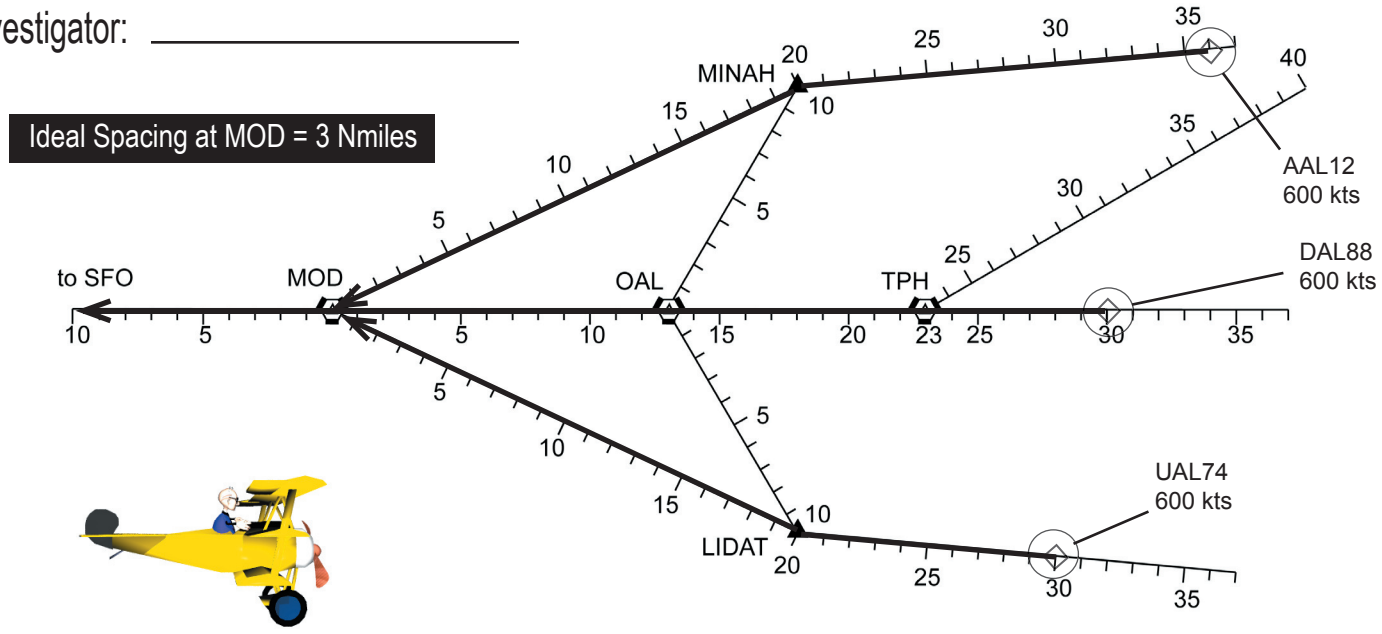
_____

End of Worksheet

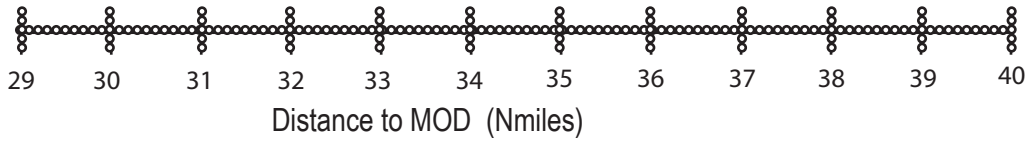


Problem 3-2

Investigator: _____



1 On the line below, use a ◇ to plot the distance to MOD for each plane. Label each plane.



2 Are all the spacings at least the Minimum Separation? ☐ No ☐ Yes

3 Which plane needs extra spacing to have Ideal spacing? _____

4 How much extra spacing is needed? _____ Nmiles .

5 On the route diagram, show how you would reroute traffic to try to achieve the Ideal Spacing.

CAUTION: Be sure to mark out any old routes you've changed and darken the new routes.

6 On the line in Question 1, use a ☐ to plot any NEW distances to MOD and cross out the old diamond for the old distance. Be sure to label each box with the plane's call sign.

7 Are all spacings now ideal? ☐ No ☐ Yes If Yes, Congratulations!

End of Worksheet